

SEQUENCE LISTING

<110> Newgard, Christopher B.
Jensen, Mette V.
Sherry, A. Dean
Burgess, Shawn C.

<120> LACTATE DEHYDROGENASE AS A NOVEL TARGET AND REAGENT FOR DIABETES THERAPY

<130> 5405-301

<150> US 60/441,476

<151> 2003-01-21

<160> 27

<170> PatentIn version 3.2

<210> 1

<211> 1609

<212> DNA

<213> Rattus norvegicus

<400> 1

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<212> PRT
<213> Rattus norvegicus

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Met Ala Cys Ala Ile Ser Ile Leu Met Lys Asp Leu Ala Asp Glu Leu
35 40 45

Ala Leu Val Asp Val Ile Glu Asp Lys Leu Lys Gly Glu Met Met Asp
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Leu Gln His Gly Ser Leu Phe Leu Lys Thr Pro Lys Ile Val Ser Ser
65 70 75 80

Lys Asp Tyr Ser Val Thr Ala Asn Ser Lys Leu Val Ile Ile Thr Ala
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Gly Ala Arg Gln Gln Glu Gly Glu Ser Arg Leu Asn Leu Val Gln Arg
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Asn Val Asn Ile Phe Lys Phe Ile Ile Pro Asn Val Val Lys Tyr Ser
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Pro Gln Cys Lys Leu Leu Ile Val Ser Asn Pro Val Asp Ile Leu Thr
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Tyr Val Ala Trp Lys Ile Ser Gly Phe Pro Lys Asn Arg Val Ile Gly
 145 150 155 160

Ser Gly Cys Asn Leu Asp Ser Ala Arg Phe Arg Tyr Leu Met Gly Glu
 165 170 175

Arg Leu Gly Val His Pro Leu Ser Cys His Gly Trp Val Leu Gly Glu
 180 185 190

His Gly Asp Ser Ser Val Pro Val Trp Ser Gly Val Asn Val Ala Gly
 195 200 205

Val Ser Leu Lys Ser Leu Asn Pro Gln Leu Gly Thr Asp Ala Asp Lys
 210 215 220

Glu Gln Trp Lys Asp Val His Lys Gln Val Val Asp Ser Ala Tyr Glu
 225 230 235 240

Val Ile Lys Leu Lys Gly Tyr Thr Ser Trp Ala Ile Gly Leu Ser Val
 245 250 255

Ala Asp Leu Ala Glu Ser Ile Met Lys Asn Leu Arg Arg Val His Pro
 260 265 270

Ile Ser Thr Met Ile Lys Gly Leu Tyr Gly Ile Lys Glu Asp Val Phe
 275 280 285

Leu Ser Val Pro Cys Ile Leu Gly Gln Asn Gly Ile Ser Asp Val Val
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 325 330

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<210> 4
 <211> 361
 <212> PRT
 <213> Rattus norvegicus

<400> 4

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Leu Lys Asp Gln Leu Ile Val Asn Leu Leu Lys Glu Glu Gln Val Pro
 35 40 45

Gln Asn Lys Ile Thr Val Val Gly Val Gly Ala Val Gly Met Ala Cys
 50 55 60

Ala Ile Ser Ile Leu Met Lys Asp Leu Ala Asp Glu Leu Ala Leu Val
 65 70 75 80

Asp Val Ile Glu Asp Lys Leu Lys Gly Glu Met Met Asp Leu Gln His
 85 90 95

Gly Ser Leu Phe Leu Lys Thr Pro Lys Ile Val Ser Ser Lys Asp Tyr
 100 105 110

Ser Val Thr Ala Asn Ser Lys Leu Val Ile Ile Thr Ala Gly Ala Arg
 115 120 125

Gln Gln Glu Gly Glu Ser Arg Leu Asn Leu Val Gln Arg Asn Val Asn
 130 135 140

Ile Phe Lys Phe Ile Ile Pro Asn Val Val Lys Tyr Ser Pro Gln Cys
 145 150 155 160

Lys Leu Leu Ile Val Ser Asn Pro Val Asp Ile Leu Thr Tyr Val Ala
 165 170 175

Trp Lys Ile Ser Gly Phe Pro Lys Asn Arg Val Ile Gly Ser Gly Cys
 180 185 190

Asn Leu Asp Ser Ala Arg Phe Arg Tyr Leu Met Gly Glu Arg Leu Gly
 195 200 205

Val His Pro Leu Ser Cys His Gly Trp Val Leu Gly Glu His Gly Asp
 210 215 220

Ser Ser Val Pro Val Trp Ser Gly Val Asn Val Ala Gly Val Ser Leu
 225 230 235 240

Lys Ser Leu Asn Pro Gln Leu Gly Thr Asp Ala Asp Lys Glu Gln Trp
 245 250 255

Lys Asp Val His Lys Gln Val Val Asp Ser Ala Tyr Glu Val Ile Lys
 260 265 270

Leu Lys Gly Tyr Thr Ser Trp Ala Ile Gly Leu Ser Val Ala Asp Leu
 275 280 285

Ala Glu Ser Ile Met Lys Asn Leu Arg Arg Val His Pro Ile Ser Thr
 290 295 300

Met Ile Lys Gly Leu Tyr Gly Ile Lys Glu Asp Val Phe Leu Ser Val
 305 310 315 320

Pro Cys Ile Leu Gly Gln Asn Gly Ile Ser Asp Val Val Lys Val Thr
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 <212> PRT
 <213> Artificial Sequence

<220>
 <223> Mitochondrial targeting peptide

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<210> 6
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 <212> PRT
 <213> Zea mays

<400> 6

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Asn Tyr

<210> 7
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 <212> PRT
 <213> Artificial Sequence

<220>
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<400> 7

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Leu Cys Ser Ser Arg Tyr Leu Leu
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<210> 8
<211> 27
<212> PRT
<213> Artificial Sequence

<220>
<223> Mitochondrial targeting peptide

<400> 8

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Phe Ser Arg Asn Ile Leu Arg Leu Gln Ser Thr
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<210> 9
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<212> PRT
<213> Artificial Sequence

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<223> Mitochondrial targeting peptide

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Thr

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<212> PRT
<213> Artificial Sequence

<220>
<223> Mitochondrial targeting peptide

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Ser Phe Tyr Ser Thr
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<210> 11

<211> 10
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 <213> Artificial Sequence

 <220>
 <223> Mitochondrial targeting peptide

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 <210> 12
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 <212> DNA
 <213> Artificial Sequence

 <220>
 <223> Synthetic oligonucleotide primer

 <400> 12
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 <211> 28
 <212> DNA
 <213> Artificial Sequence

 <220>
 <223> Synthetic oligonucleotide primer

 <400> 13
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 <210> 14
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 <212> DNA
 <213> Artificial Sequence

 <220>
 <223> Synthetic oligonucleotide primer

 <400> 14
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 <210> 15
 <211> 22
 <212> DNA
 <213> Artificial Sequence

 <220>
 <223> Synthetic oligonucleotide primer

 <400> 15
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<210> 16
 <211> 24
 <212> DNA
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 <220>
 <223> Synthetic oligonucleotide primer

 <400> 16
 aaccgtgtaa gaggagggac catc 24

 <210> 17
 <211> 24
 <212> DNA
 <213> Artificial Sequence

 <220>
 <223> Synthetic oligonucleotide primer

 <400> 17
 tggaccaact ggactaacca cagc 24

 <210> 18
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 <212> DNA
 <213> Mus musculus

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 <210> 19
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 <212> DNA
 <213> Mus musculus

 <400> 19
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 <210> 20
 <211> 29
 <212> PRT
 <213> Mus musculus

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 1 5 10 15

 Phe Phe His Phe Lys Val Ser Lys Asp Ser Lys Ser Lys
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<210> 21
<211> 29
<212> PRT
<213> Rattus norvegicus

<400> 21

Met Ser Lys Asn Ser Gly Gly Tyr Thr Tyr Thr Glu Thr Ser Val Leu
1 5 10 15

Phe Phe His Phe Lys Val Pro Lys Asp Ser Lys Ser Lys
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<210> 22
<211> 29
<212> PRT
<213> Homo sapiens

<400> 22

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1 5 10 15

Leu Phe His Ala Lys Ile Pro Phe Gly Ser Lys Ser Asn
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<210> 23
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<212> PRT
<213> Artificial Sequence

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<210> 24
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<212> DNA
<213> Mus musculus

<400> 24

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<210> 25
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 <212> PRT

<213> Mus musculus

<400> 25

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35 40 45

Gln Asn Lys Ile Thr Val Val Gly Val Gly Ala Val Gly Met Ala Cys
50 55 60

Ala Ile Ser Ile Leu Met Lys Asp Leu Ala Asp Glu Leu Ala Leu Val
65 70 75 80

Asp Val Met Glu Asp Lys Leu Lys Gly Glu Met Met Asp Leu Gln His
85 90 95

Gly Ser Leu Phe Leu Lys Thr Pro Lys Ile Val Ser Ser Lys Asp Tyr
100 105 110

Cys Val Thr Ala Asn Ser Lys Leu Val Ile Ile Thr Ala Gly Ala Arg
115 120 125

Gln Gln Glu Gly Glu Ser Arg Leu Asn Leu Val Gln Arg Asn Val Asn
130 135 140

Ile Phe Lys Phe Ile Ile Pro Asn Ile Val Lys Tyr Ser Pro His Cys
145 150 155 160

Lys Leu Leu Ile Val Ser Asn Pro Val Asp Ile Leu Thr Tyr Val Ala
165 170 175

Trp Lys Ile Ser Gly Phe Pro Lys Asn Arg Val Ile Gly Ser Gly Cys
180 185 190

Asn Leu Asp Ser Ala Arg Phe Arg Tyr Leu Met Gly Glu Arg Leu Gly
195 200 205

Val His Ala Leu Ser Cys His Gly Trp Val Leu Gly Glu His Gly Asp
210 215 220

Ser Ser Val Pro Val Trp Ser Gly Val Asn Val Ala Gly Val Ser Leu

225		230		235		240
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Lys Glu Val His Lys Gln Val Val Asp Ser Ala Tyr Glu Val Ile Lys						
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Leu Lys Gly Tyr Thr Ser Trp Ala Ile Gly Leu Ser Val Ala Asp Leu						
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Ala Glu Ser Ile Met Lys Asn Leu Arg Arg Val His Pro Ile Ser Thr						
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Met Ile Lys Gly Leu Tyr Gly Ile Asn Glu Asp Val Phe Leu Ser Val						
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Pro Cys Ile Leu Gly Gln Asn Gly Ile Ser Asp Val Val Lys Val Thr						
	325			330		335
Leu Thr Pro Glu Glu Glu Ala Arg Leu Lys Lys Ser Ala Asp Thr Leu						
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 <212> DNA
 <213> Homo sapiens

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<210> 27
<211> 361
<212> PRT
<213> Homo sapiens

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<400> 27

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Leu Lys Asp Gln Leu Ile Tyr Asn Leu Leu Lys Glu Glu Gln Thr Pro
35           40           45

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Gln Asn Lys Ile Thr Val Val Gly Val Gly Ala Val Gly Met Ala Cys

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Gly	Ser	Leu	Phe	Leu	Arg	Thr	Pro	Lys	Ile	Val	Ser	Gly	Lys	Asp	Tyr
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Asn	Val	Thr	Ala	Asn	Ser	Lys	Leu	Val	Ile	Ile	Thr	Ala	Gly	Ala	Arg
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Gln	Gln	Glu	Gly	Glu	Ser	Arg	Leu	Asn	Leu	Val	Gln	Arg	Asn	Val	Asn
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Ile	Phe	Lys	Phe	Ile	Ile	Pro	Asn	Val	Val	Lys	Tyr	Ser	Pro	Asn	Cys
145				150					155						160
Lys	Leu	Leu	Ile	Val	Ser	Asn	Pro	Val	Asp	Ile	Leu	Thr	Tyr	Val	Ala
			165						170					175	
Trp	Lys	Ile	Ser	Gly	Phe	Pro	Lys	Asn	Arg	Val	Ile	Gly	Ser	Gly	Cys
		180						185					190		
Asn	Leu	Asp	Ser	Ala	Arg	Phe	Arg	Tyr	Leu	Met	Gly	Glu	Arg	Leu	Gly
		195					200					205			
Val	His	Pro	Leu	Ser	Cys	His	Gly	Trp	Val	Leu	Gly	Glu	His	Gly	Asp
	210					215					220				
Ser	Ser	Val	Pro	Val	Trp	Ser	Gly	Met	Asn	Val	Ala	Gly	Val	Ser	Leu
225				230					235						240
Lys	Thr	Leu	His	Pro	Asp	Leu	Gly	Thr	Asp	Lys	Asp	Lys	Glu	Gln	Trp
			245					250						255	
Lys	Glu	Val	His	Lys	Gln	Val	Val	Glu	Ser	Ala	Tyr	Glu	Val	Ile	Lys
		260						265					270		
Leu	Lys	Gly	Tyr	Thr	Ser	Trp	Ala	Ile	Gly	Leu	Ser	Val	Ala	Asp	Leu
	275						280					285			
Ala	Glu	Ser	Ile	Met	Lys	Asn	Leu	Arg	Arg	Val	His	Pro	Val	Ser	Thr
	290					295					300				

Met Ile Lys Gly Leu Tyr Gly Ile Lys Asp Asp Val Phe Leu Ser Val
305 310 315 320

Pro Cys Ile Leu Gly Gln Asn Gly Ile Ser Asp Leu Val Lys Val Thr
325 330 335

Leu Thr Ser Glu Glu Glu Ala Arg Leu Lys Lys Ser Ala Asp Thr Leu
340 345 350

Trp Gly Ile Gln Lys Glu Leu Gln Phe
355 360